



[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. FAA-2013-0317; Special Conditions No. 25-487-SC]

Special Conditions: Airbus Model A330-200 Airplanes; Bulk Cargo Lower Deck Crew Rest Compartments.

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special condition; request for comments.

SUMMARY: These special conditions are issued for the Airbus Model A330-200 airplane. This airplane as modified by TTF Aerospace LLC will have a novel or unusual design feature associated with the installation of bulk cargo lower deck crew rest compartments. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

DATES: The effective date of these special conditions is April 3, 2013. We must receive your comments by **[insert a date 45 days after date of publication in the *Federal Register*]**.

ADDRESSES: Send comments identified by docket number FAA-2013-0317 using any of the following methods:

Federal eRegulations Portal: Go to <http://www.regulations.gov/> and follow the online instructions for sending your comments electronically.

Mail: Send comments to Docket Operations, M-30, U.S. Department of Transportation (DOT), 1200 New Jersey Avenue, SE, Room W12-140, West Building Ground Floor, Washington, D.C., 20590-0001.

Hand Delivery or Courier: Take comments to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE, Washington, D.C., between 8 a.m. and 5 p.m., Monday through Friday, except federal holidays.

Fax: Fax comments to Docket Operations at 202-493-2251.

Privacy: The FAA will post all comments it receives, without change, to <http://www.regulations.gov/>, including any personal information the commenter provides. Using the search function of the docket web site, anyone can find and read the electronic form of all comments received into any FAA docket, including the name of the individual sending the comment (or signing the comment for an association, business, labor union, etc.). DOT's complete Privacy Act Statement can be found in the *Federal Register* published on April 11, 2000 (65 FR 19477–19478), as well as at <http://DocketsInfo.dot.gov/>.

Docket: Background documents or comments received may be read at <http://www.regulations.gov/> at any time. Follow the online instructions for accessing the docket or go to the Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE, Washington, D.C., between 9 a.m. and 5 p.m., Monday through Friday, except federal holidays.

FOR FURTHER INFORMATION CONTACT: Alan Sinclair, Airframe and Cabin Safety Branch, ANM-115, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind

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SUPPLEMENTARY INFORMATION:

The FAA has determined that notice of, and opportunity for prior public comment on, these special conditions are unnecessary because the substance of these special conditions has been subject to the public comment process in several prior instances with no substantive comments received. The FAA therefore finds that good cause exists for making these special conditions effective upon issuance.

Comments Invited

We invite interested people to take part in this rulemaking by sending written comments, data, or views. The most helpful comments reference a specific portion of the special conditions, explain the reason for any recommended change, and include supporting data.

We will consider all comments we receive by the closing date for comments. We may change these special conditions based on the comments we receive.

Background

On May 19, 2011, TTF Aerospace LLC applied for a supplemental type certificate to install a bulk cargo lower deck crew rest compartment in the Airbus Model A330-200 airplane. The Airbus Model A330-200 airplane is a wide-body, twin engine jet airplane. Operating this model requires two pilots. Model A330-200 airplanes that carry up to 375 passengers have three pairs of Type A exits, and one pair of Type 1 exits, and Model A330-200 airplanes that carry up to 379 passengers have four pairs of Type A exits. Versions of the Model A330 airplanes have a range of 4,000 to 7,250 nautical miles and can carry 150,000 pounds of cargo.

Type Certification Basis

Under the provisions of § 21.101, TTF Aerospace LLC must show that the Airbus Model A330-200, as changed, continues to meet the applicable provisions of the regulations incorporated by reference in Type Certificate No. A46NM or the applicable regulations in effect on the date of application for the change. The regulations incorporated by reference in the type certificate are commonly referred to as the “original type certification basis.” The regulations incorporated by reference in A46NM are as follows: 14 CFR part 25, as amended by Amendments 25-1 through 25-63; certain regulations at later Amendments 25-65, 25-66, and 25-68, 25-69, 25-73, 25-75, 25-77, 25-78, 25-81, 25-82, 25-84, and 25-85 with exceptions. Refer to Type Certificate Data Sheet A46NM, as applicable, for a complete description of the certification basis for these models, including certain special conditions and equivalent safety findings that are not relevant to these proposed special conditions.

If the Administrator finds that the applicable airworthiness regulations (i.e., 14 CFR part 25) do not contain adequate or appropriate safety standards for the Model A330-200 airplane because of a novel or unusual design feature, special conditions are prescribed under the provisions of § 21.16.

Special conditions are initially applicable to the model for which they are issued. Should the applicant apply for a supplemental type certificate to modify any other model included on the same type certificate to incorporate the same novel or unusual design feature, the special conditions would also apply to the other model.

In addition to the applicable airworthiness regulations and special conditions, the Airbus Model A330-200 airplanes must comply with the fuel vent and exhaust emission requirements of 14 CFR part 34 and the noise certification requirements of 14 CFR part 36.

The FAA issues special conditions, as defined in 14 CFR 11.19, in accordance with § 11.38, and they become part of the type certification basis under § 21.101.

Novel or Unusual Design Features

The Airbus Model A330-200 will incorporate the following novel or unusual design features: bulk cargo lower deck crew rest compartments.

While the installation of the crew rest compartment is not a new concept for large transport category airplane, each crew rest compartment has unique features based on design, location, and use on the airplane. The bulk cargo lower deck crew rest (BCCR) compartment is novel in terms of part 25 in that it will be located under the passenger cabin floor in the aft cargo compartment of Airbus Model A330-200 series airplanes. Due to the novel or unusual features associated with the installation of a BCCR compartment, special conditions are considered necessary to provide a level of safety equal to that established by the airworthiness regulations incorporated by reference in the type certificates of these airplanes. It will be the size of the aft section of the bulk cargo loading area and will be optional for removal from the cargo compartment. The BCCR compartment will be occupied in flight but not during taxi, take off, or landing. No more than eight crew members at a time will be permitted to occupy it. The BCCR compartment will have a built in smoke detection system, an oxygen system, and decompression warning system that all connect to the main cabin and cockpit.

The BCCR compartment will be accessed from the main deck via a “stair house.” The floor within the stair house has a hatch that leads to stairs which occupants use to descend into the BCCR compartment. An interface will keep this hatch open when the stair house door is open. In addition, an emergency hatch opens directly into the main passenger cabin. The BCCR has access panels to allow the crew to perform maintenance without removal of the crew rest compartment.

This installation of BCCR is similar to the installation of Lower Deck Mobile Crew Rest (LD-MCR) on Airbus Model A330 and 340 series airplanes for which Special Conditions No. 25-281-SC were issued on December 29, 2004. The currently installed LD-MCR will be removed and the BCCR will be installed in the aft lower lobe of the airplane. The BCCR occupies the entire bulk baggage compartment.

Discussion

The applicant should note that the FAA considers smoke or fire detection and fire suppression systems (including airflow management features which prevent hazardous quantities of smoke or fire extinguishing agent from entering any other compartment occupied by crew members or passengers) for crew rest compartments complex in terms of paragraph 6d of Advisory Circular (AC) 25.1309-1A, *System Design and Analysis*, dated June 21, 1988. In addition, the FAA considers failure of the crew rest compartment fire protection system (i.e., smoke or fire detection and fire suppression systems) in conjunction with a crew rest fire to be a catastrophic event. Based on the “Depth of Analysis Flowchart” shown in Figure 2 of AC 25.1309-1A, the depth of analysis should include both qualitative and quantitative assessments. Refer to paragraphs 8d, 9, and 10 of AC 25.1309-1A. In addition, it should be noted

that flammable fluids, explosives, or other dangerous cargo are prohibited from being carried in the crew rest areas.

The requirements to enable crew members' quick entry to the crew rest compartment and to locate a fire source inherently places limits on the amount of baggage that may be carried and the size of the crew rest area. The FAA considers that the crew rest area must be limited to the stowage of crew personal luggage and must not be used for the stowage of cargo or passenger baggage. The design of such a system to include cargo or passenger baggage would require additional requirements to ensure safe operation.

The addition of galley equipment or a kitchenette incorporating a heat source (e.g., cook tops, microwaves, coffee pots, etc.), other than a conventional lavatory or kitchenette hot water heater, within the BCCR compartment defined in the "Novel or Unusual Design Features" section, may require further Special Conditions to be considered. A hot water heater is acceptable without further Special Conditions consideration.

Operational Evaluations and Approval

In lieu of a type design placard indicating the operational qualification of the crew rest compartment, the following Operational Evaluation and Approval process must be followed.

These special conditions outline requirements for flight crew and cabin crew rest compartment design approvals (e.g., type design change or supplemental type certificate) administered by the FAA's Aircraft Certification Service. Prior to operational use of a flight (cabin) crew rest compartment, the FAA's Flight Standards Service must evaluate for operational suitability the flight (cabin) crew sleeping quarters and rest facilities. Refer to §§ 91.1061(b)(1), 121.485(a), 121.523(b), and 135.269(b)(5).

Compliance with these special conditions does not ensure that the applicant has demonstrated compliance with the requirements of 14 CFR parts 91, 121, or 135.

To obtain an operational evaluation, the type design holder must contact the appropriate Aircraft Evaluation Group (AEG) in the Flight Standards Service and request an evaluation for operational suitability of the flight crew sleeping quarters in their crew rest facility. Results of these evaluations should be documented and appended to the applicable Flight Standardization Board (FSB) Report. Individual operators may reference these standardized evaluations in discussions with their FAA Principal Operating Inspector (POI) as the basis for an operational approval, in lieu of an on-site operational evaluation.

Any changes to the approved flight (cabin) crew rest compartment configuration that affect crew member emergency egress or any other procedures affecting the safety of the occupying crewmembers and/or related training shall require a re-evaluation and approval. In the event of any design change that affects egress, safety procedures, or training, the applicant is responsible for notifying the FAA's AEG that a new crew rest facility evaluation is required.

All instructions for continued airworthiness (ICAs) will be submitted to the Seattle AEG for approval acceptance, including service bulletins, before issuance of the FAA modification approval.

Amendment 25-38 modified the requirements of § 25.1439(a) by adding, "In addition, protective breathing equipment must be installed in each isolated separate compartment in the airplane. Including upper and lower lobe galleys, in which crew member occupancy is permitted during flight for the maximum number of crew members expected to be in the area during any operation." The BCCR compartment is an isolated separate compartment, so § 25.1439(a) is

applicable. However, the § 25.1439(a) protective breathing equipment (PBE) requirements for isolated separate compartments are not appropriate because the BCCR is novel and unusual in terms of the number of occupants.

In 1976, when Amendment 25-38 was adopted, small galleys were the only isolated compartments that had been certificated. Two crewmembers were the maximum expected to occupy those galleys.

This crew rest compartment can accommodate up to eight crew members. This large number of occupants in an isolated compartment was not envisioned at the time Amendment 25-38 was adopted. It is not appropriate for all occupants to don PBEs in the event of a fire because the first action should be to leave the confined space unless the occupant is fighting the fire. Taking the time to don the PBE would prolong the time for the emergency evacuation of the occupants and possibly interfere with efforts to extinguish the fire. This special condition therefore provides procedures that establish a level of safety equivalent to the PBE requirements.

For all of the areas discussed above, these special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

Applicability

As discussed above, these special conditions are applicable to the Airbus Model A330-200. Should TTF Aerospace LLC apply at a later date for a supplemental type certificate to modify any other model included on Type Certificate No. A46NM to incorporate the same novel or unusual design feature, the special conditions would apply to that model as well.

Conclusion

This action affects only certain novel or unusual design features on one model of airplanes. It is not a rule of general applicability and affects only the applicant who applied to the FAA for approval of these features on the airplane.

The substance of these special conditions has been subjected to the notice and comment period in several prior instances and has been derived without substantive change from those previously issued. It is unlikely that prior public comment would result in a significant change from the substance contained herein. Therefore, the FAA has determined that prior public notice and comment are unnecessary, and good cause exists for adopting these special conditions upon issuance. The FAA is requesting comments to allow interested persons to submit views that may not have been submitted in response to the prior opportunities for comment described above.

List of Subjects in 14 CFR Part 25

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

The authority citation for these special conditions is as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701, 44702, 44704.

The Special Conditions

Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the type certification basis for Airbus Model A330-200 airplanes modified by TTF Aerospace LLC. The FAA formulated the proposed Special Conditions for the A330-200 bulk cargo lower deck crew rest (BCCR) compartment from previous requirements established for various airplanes. The BCCR compartment must meet the following requirements.

1. Occupancy of the BCCR compartment is limited to the total number of installed bunks and seats in that compartment. There must be an approved seat or berth able to withstand the maximum flight loads when occupied for each occupant permitted in the crew rest compartment. The maximum occupancy is eight in the BCCR compartment.

(a) There must be appropriate placards displayed in a conspicuous place at each entrance to the BCCR compartment to indicate:

- (1) The maximum number of occupants allowed;
- (2) That occupancy is restricted to crew members that are trained in the evacuation procedures for the crew rest compartment;
- (3) That occupancy is prohibited during taxi, take-off and landing;
- (4) That smoking is prohibited in the crew rest compartment;
- (5) That hazardous quantities of flammable fluids, explosives, or other dangerous cargo are prohibited in the crew rest compartment.

(6) That the crew rest area must be limited to the stowage of crew personal luggage and must not be used for the stowage of cargo or passenger baggage.

(b) There must be at least one ashtray located conspicuously on or near the entry side of any entrance to the crew rest compartment.

(c) There must be a means to prevent passengers from entering the compartment in the event of an emergency or when no flight attendant is present.

(d) There must be a means for any door installed between the crew rest compartment and passenger cabin to be capable of being quickly opened from inside the compartment, even when crowding occurs at each side of the door.

(e) For all doors installed in the evacuation routes, there must be a means to preclude anyone from being trapped inside the compartment. If a locking mechanism is installed, it must be capable of being unlocked from the outside without the aid of special tools. The lock must not prevent opening from the inside of the compartment at any time.

2. There must be at least two emergency evacuation routes, which could be used by each occupant of the crew rest compartment to rapidly evacuate to the main cabin and be able to be closed from the main passenger cabin after evacuation. In addition—

(a) The routes must be located with one at each end of the compartment, or with two having sufficient separation within the compartment and between the routes to minimize the possibility of an event (either inside or outside of the crew rest compartment) rendering both routes inoperative.

(b) The routes must be designed to minimize the possibility of blockage, which might result from fire, mechanical or structural failure, or persons standing on top of or against the escape route. If an evacuation route uses an area where normal movement of passengers occurs, it must be demonstrated that passengers would not impede egress to the main deck. If a hatch is installed in an evacuation route, the point at which the evacuation route terminates in the passenger cabin should not be located where normal movement by passengers or crew occurs (main aisle, cross aisle, passageway, or galley complex). If such a location cannot be avoided, special consideration must be taken to ensure that the hatch or door can be opened when a person, the weight of a ninety-fifth percentile male, is standing on the hatch or door. The use of evacuation routes must not be dependent on any powered device. If there is low headroom at or

near an evacuation route, provisions must be made to prevent or to protect occupants (of the crew rest area) from head injury.

(c) Emergency evacuation procedures, including the emergency evacuation of an incapacitated occupant from the crew rest compartment, must be established. All of these procedures must be transmitted to the operator for incorporation into their training programs and appropriate operational manuals.

(d) There must be a limitation in the Airplane Flight Manual or other suitable means requiring that crew members be trained in the use of evacuation routes.

3. There must be a means for the evacuation of an incapacitated person (representative of a 95th percentile male) from the crew rest compartment to the passenger cabin floor.

The evacuation must be demonstrated for all evacuation routes. A flight attendant or other crew member (a total of one assistant within the crew rest area) may provide assistance in the evacuation. Additional assistance may be provided by up to three persons in the main passenger compartment. For evacuation routes having stairways, the additional assistants may descend down to one half the elevation changes from the main deck to the lower deck compartment, or to the first landing, whichever is higher.

4. The following signs and placards must be provided in the crew rest compartment:

(a) At least one exit sign, located near each exit, meeting the requirements of § 25.812(b)(1)(i) at Amendment 25-58, except that a sign with reduced background area of no less than 5.3 square inches (excluding the letters) may be used, provided that it is installed such that the material surrounding the exit sign is light in color (e.g., white, cream, or light beige). If

the material surrounding the exit sign is not light in color, a sign with a minimum of a one-inch wide background border around the letters would also be acceptable;

- (b) An appropriate placard located near each exit defining the location and the operating instructions for each evacuation route;

- (c) Placards must be readable from a distance of 30 inches under emergency lighting conditions; and

- (d) The exit handles and evacuation path operating instruction placards must be illuminated to at least 160 microlamberts under emergency lighting conditions.

5. There must be a means in the event of failure of the aircraft's main power system, or of the normal crew rest compartment lighting system, for emergency illumination to be automatically provided for the crew rest compartment.

- (a) This emergency illumination must be independent of the main lighting system.

- (b) The sources of general cabin illumination may be common to both the emergency and the main lighting systems if the power supply to the emergency lighting system is independent of the power supply to the main lighting system.

- (c) The illumination level must be sufficient for the occupants of the crew rest compartment to locate and transfer to the main passenger cabin floor by means of each evacuation route.

- (d) The illumination level must be sufficient with the privacy curtains in the closed position for each occupant of the crew rest compartment to locate a deployed oxygen mask.

6. There must be means for two-way voice communications between crew members on the flight deck and occupants of the crew rest compartment. There must also be public address system microphones at each flight attendant seat required to be near a floor level exit in the passenger cabin per § 25.785(h) at Amendment 25-51 which allows two-way voice communications between flight attendants and the occupants of the crew rest compartment, except that one microphone may serve more than one exit provided the proximity of the exits allow unassisted verbal communication between seated flight attendants.

7. There must be a means for manual activation of an aural emergency alarm system, audible during normal and emergency conditions, to enable crew members on the flight deck and at each pair of required floor level emergency exits to alert occupants of the crew rest compartment of an emergency situation. Use of a public address or crew interphone system will be acceptable, provided an adequate means of differentiating between normal and emergency communications is incorporated. The system must be powered in flight, after the shutdown or failure of all engines and auxiliary power units (APU), or the disconnection or failure of all power sources dependent on their continued operation (i.e., engine and APU), for a period of at least ten minutes.

8. There must be a means, readily detectable by seated or standing occupants of the crew rest compartment, which indicates when seat belts should be fastened. In the event there are no seats, at least one means must be provided to cover anticipated turbulence (e.g., sufficient handholds). Seat belt type restraints must be provided for berths and must be compatible for the sleeping attitude during cruise conditions. There must be a placard on each berth requiring that seat belts must be fastened when occupied. If compliance with any of the other requirements of

these special conditions is predicated on specific head location, there must be a placard identifying the head position.

9. In lieu of the requirements specified in § 25.1439(a) at Amendment 25-38 that pertain to isolated compartments and to provide a level of safety equivalent to that which is provided occupants of a small isolated galley, the following equipment must be provided in the crew rest compartment:

- (a) At least one approved hand-held fire extinguisher appropriate for the kinds of fires likely to occur;
- (b) Two protective breathing equipment (PBE) devices approved to Technical Standard Order (TSO)-C116 or equivalent, suitable for fire fighting, or one PBE for each hand-held fire extinguisher, whichever is greater; and
- (c) One flashlight.

Note: Additional PBEs and fire extinguishers in specific locations, (beyond the minimum numbers prescribed in special condition 9) may be required as a result of any egress analysis accomplished to satisfy special condition 2(a).

10. A smoke or fire detection system (or systems) must be provided that monitors each occupiable area within the crew rest compartment, including those areas partitioned by curtains. Flight tests must be conducted to show compliance with this requirement. Each system must provide:

- (a) A visual indication to the flight deck within one minute after the start of a fire;
- (b) An aural warning in the crew rest compartment; and

(c) A warning in the main passenger cabin. This warning must be readily detectable by a flight attendant, taking into consideration the positioning of flight attendants throughout the main passenger compartment during various phases of flight.

11. The crew rest compartment must be designed such that fires within the compartment can be controlled without a crew member having to enter the compartment, or the design of the access provisions must allow crew members equipped for fire fighting to have unrestricted access to the compartment. The time for a crew member on the main deck to react to the fire alarm, to don the fire fighting equipment, and to gain access must not exceed the time for the compartment to become smoke-filled, making it difficult to locate the fire source. Procedures describing methods to search the crew rest compartments for fire sources(s) must be established. These procedures must be transmitted to the operator for incorporation into their training programs and appropriate operational manuals.

12. There must be a means provided to exclude hazardous quantities of smoke or extinguishing agent originating in the crew rest compartment from entering any other compartment occupied by crew members or passengers. This means must include the time periods during the evacuation of the crew rest compartment and, if applicable, when accessing the crew rest compartment to manually fight a fire. Smoke entering any other compartment occupied by crew members or passengers when the access to the crew rest compartment is opened, during an emergency evacuation, must dissipate within five minutes after the access to the crew rest compartment is closed. Hazardous quantities of smoke may not enter any other compartment occupied by crew members or passengers during subsequent access to manually fight a fire in the crew rest compartment (the amount of smoke entrained by a firefighter exiting

the crew rest compartment through the access is not considered hazardous). During the 1-minute smoke detection time, penetration of a small quantity of smoke from the crew rest compartment into an occupied area is acceptable. Flight tests must be conducted to show compliance with this requirement.

There must be a provision in the firefighting procedures to ensure that all door(s) and hatch(es) at the crew rest compartment outlets are closed after evacuation of the crew rest compartment and during firefighting to minimize smoke and extinguishing agent from entering other occupiable compartments.

If a built-in fire extinguishing system is used in lieu of manual fire fighting, then the fire extinguishing system must be designed so that no hazardous quantities of extinguishing agent will enter other compartments occupied by passengers or crew. The system must have adequate capacity to suppress any fire occurring in the crew rest compartment, considering the fire threat, volume of the compartment, and the ventilation rate.

13. There must be a supplemental oxygen system within the crew rest compartment as follows:

(a) There must be at least one mask for each seat, and berth in the crew rest compartment.

(b) If a destination area (such as a changing area) is provided in the BCCR compartment, then there must be an oxygen mask readily available for each occupant that can reasonably be expected to be in the destination area (with the maximum number of required masks within the destination area being limited to the placarded maximum occupancy of the crew rest compartment).

(c) There must also be an oxygen mask readily accessible to each occupant that can reasonably be expected to be either transitioning from the main cabin into the crew rest compartment, transitioning within the crew rest compartment, or transitioning from the crew rest compartment to the main cabin.

(d) The system must provide an aural and visual alert to warn the occupants of the BCCR compartment to don oxygen masks in the event of decompression. The aural and visual alerts must activate concurrently with the deployment of the oxygen masks in the passenger cabin. To compensate for sleeping occupants, the aural alert must be heard in each section of the BCCR compartment and must sound continuously for a minimum of five minutes or until a reset switch within the BCCR compartment is activated. A visual alert that informs occupants that they must don an oxygen mask must be visible in each section.

(e) There must also be a means by which the oxygen masks can be manually deployed from the flight deck.

(f) Procedures for occupants in the crew rest compartment in the event of decompression must be established. These procedures must be transmitted to the operator for incorporation into their training programs and appropriate operational manuals.

(g) The supplemental oxygen system for the crew rest compartment shall meet the same 14 CFR part 25 regulations as the supplemental oxygen system for the passenger cabin occupants except for the 10 percent additional masks requirement of 14 CFR 25.1447(c)(1).

(h) The illumination level of the normal BCCR compartment lighting system must automatically be sufficient for each occupant of the compartment to locate a deployed oxygen mask.

14. The following additional requirements apply to crew rest compartments that are divided into several sections by the installation of curtains or partitions:

(a) To compensate for sleeping occupants, there must be an aural alert that can be heard in each section of the crew rest compartment that accompanies automatic presentation of supplemental oxygen masks. Supplemental oxygen must meet the requirements of Special Condition no. 13.

(b) A placard is required adjacent to each curtain that visually divides or separates, for privacy purposes, the crew rest compartment into small sections. The placard must require that the curtain(s) remains open when the private section it creates is unoccupied.

(c) For each section in the crew rest compartment that is created by the installation of a curtain, the following requirements of these Special Conditions must be met with the curtain open or closed:

(1) Emergency illumination (Special Condition no. 5);

(2) Emergency alarm system (Special Condition no. 7);

(3) Seat belt fasten signal or return to seat signal as applicable (Special Condition no. 8); and

(4) The smoke or fire detection system (Special Condition no. 10).

(d) Crew rest compartments visually divided to the extent that evacuation could be affected must have exit signs that direct occupants to the primary stairway exit. The exit signs must be provided in each separate section of the crew rest compartment, and they must meet the requirements of § 25.812(b)(1)(i) at Amendment 25-58. An exit sign with reduced background area as described in Special Condition No. 4.(a) may be used to meet this requirement.

(e) For sections within a crew rest compartment that are created by the installation of a partition with a door separating the sections, the following requirements of these Special Conditions must be met with the door open or closed:

(1) There must be a secondary evacuation route from each section to the main deck, or alternatively, it must be shown that any door between the sections has been designed to preclude anyone from being trapped inside the compartment. Removal of an incapacitated occupant within this area must be considered. A secondary evacuation route from a small room designed for only one occupant for short time duration, such as a changing area or lavatory, is not required. However, removal of an incapacitated occupant within this area must be considered.

(2) Any door between the sections must be shown to be openable when crowded against, even when crowding occurs at each side of the door.

(3) There may be no more than one door between any seat or berth and the primary stairway exit.

(4) There must be exit signs in each section meeting the requirements of § 25.812(b)(1)(i) at Amendment 25-58 that direct occupants to the primary stairway exit. An exit sign with reduced background area as described in Special Condition No. 4.(a) may be used to meet this requirement.

(5) Special Conditions No. 5 (emergency illumination), No. 7 (emergency alarm system), No. 8 (fasten seat belt signal or return to seat signal as applicable) and No. 10 (smoke or fire detection system) must be met with the door open or closed.

(6) Special Conditions No. 6 (two-way voice communication) and No. 9 (emergency fire fighting and protective equipment) must be met independently for each separate section except for lavatories or other small areas that are not intended to be occupied for extended periods of time,

15. Where a waste disposal receptacle is fitted, it must be equipped with a built-in fire extinguisher designed to discharge automatically upon occurrence of a fire in the receptacle.

16. Materials (including finishes or decorative surfaces applied to the materials) must comply with the flammability requirements of § 25.853 at Amendment 25-66. Mattresses must comply with the flammability requirements of § 25.853(b) and (c) at Amendment 25-66.

17. The addition of a lavatory within the crew rest compartment would require the lavatory to meet the same requirements as those for a lavatory installed on the main deck except with regard to Special Condition 10 for smoke detection.

18. When a crew rest compartment is installed or enclosed as a removable module in part of a cargo compartment or is located directly adjacent to a cargo compartment without an intervening cargo compartment wall, the following applies:

(a) Any wall of the module (container) forming part of the boundary of the reduced cargo compartment, subject to direct flame impingement from a fire in the cargo compartment and including any interface item between the module (container) and the airplane structure or systems, must meet the applicable requirements of § 25.855 at Amendment 25-60.

(b) Means must be provided so that the fire protection level of the cargo compartment meets the applicable requirements of §§ 25.855 at Amendment 25-60, 25.857 at

Amendment 25-60 and 25.858 at Amendment 25-54 when the module (container) is not installed.

(c) Use of each emergency evacuation route must not require occupants of the crew rest compartment to enter the cargo compartment in order to return to the passenger compartment.

(d) The aural warning in Special Condition 7 must sound in the crew rest compartment in the event of a fire in the cargo compartment.

19. Means must be provided to prevent access into the Class C cargo compartment during all airplane operations and to ensure that the maintenance door is closed during all airplane flight operations.

20. All enclosed stowage compartments within the crew rest compartment that are not limited to stowage of emergency equipment or airplane supplied equipment (e.g., bedding) must meet the design criteria given in the table below. As indicated by the table below, enclosed stowage compartments greater than 200 ft³ in interior volume are not addressed by this Special Condition. The in-flight accessibility of very large enclosed stowage compartments and the subsequent impact on the crew members' ability to effectively reach any part of the compartment with the contents of a hand fire extinguisher will require additional fire protection considerations similar to those required for inaccessible compartments such as Class C cargo compartments.

	Stowage Compartment Interior Volumes		
Fire Protection Features	less than 25 ft ³	25 ft ³ to 57 ft ³	57 ft ³ to 200 ft ³
Materials of Construction ¹	Yes	Yes	Yes
Detectors ²	No	Yes	Yes
Liner ³	No	Conditional	Yes
Locating Device ⁴	No	Yes	Yes

¹Material

The material used to construct each enclosed stowage compartment must at least be fire resistant and must meet the flammability standards established for interior components per the requirements of § 25.853. For compartments less than 25 ft³ in interior volume, the design must ensure the ability to contain a fire likely to occur within the compartment under normal use.

²Detectors

Enclosed stowage compartments equal to or exceeding 25 ft³ in interior volume must be provided with a smoke or fire detection system to ensure that a fire can be detected within a one-minute detection time. Flight tests must be conducted to show compliance with this requirement.

Each system (or systems) must provide:

- (a) A visual indication in the flight deck within one minute after the start of a fire;
- (b) An aural warning in the crew rest compartment; and
- (c) A warning in the main passenger cabin, This warning must be readily detectable by a flight attendant, taking into consideration the positioning of flight attendants throughout the main passenger compartment during various phases of flight.

³Liner

If it can be shown that the material used to construct the stowage compartment meets the flammability requirements of a liner for a Class B cargo compartment (i.e., § 25.855 at Amendment 25-116, and Appendix F, part I, paragraph (a)(2)(ii)), then no liner would be required for enclosed stowage compartments equal to or greater than 25 ft³ in interior volume but less than 57 ft³ in interior volume. For all enclosed stowage compartments equal to or greater than 57 ft³ in interior volume but less than or equal to 200 ft³, a liner must be provided that meets the requirements of § 25.855 at Amendment 25-60 for a Class B cargo compartment.

⁴Location Detector

Crew rest areas which contain enclosed stowage compartments exceeding 25 ft³ interior volume and which are located away from one central location such as the entry to the crew rest area or a common area within the crew rest area would require additional fire protection features and/or devices to assist the firefighter in determining the location of a fire.

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